

**IN THE UNITED STATES DISTRICT COURT  
FOR THE WESTERN DISTRICT OF TEXAS  
WACO DIVISION**

SMART MOBILE TECHNOLOGIES LLC,

Plaintiff,

v.

APPLE INC.

Defendant.

Case No. 6:21-cv-00603-ADA

SMART MOBILE TECHNOLOGIES LLC,

Plaintiff,

v.

SAMSUNG ELECTRONICS CO., LTD., and  
SAMSUNG ELECTRONICS AMERICA,  
INC.,

Defendants.

Case No. 6:21-cv-00701-ADA

**DEFENDANTS' OPENING CLAIM CONSTRUCTION BRIEF  
REGARDING THE '434 PATENT FAMILY**

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## **I. INTRODUCTION**

Smart Mobile Technologies LLC (“SMT”) asserts more than 160 claims of 14 patents against Defendants Apple Inc. (“Apple”) and Samsung Electronics Co. Ltd. and Samsung Electronics America, Inc. (collectively “Samsung”) (collectively “Defendants”). This brief addresses eight of the asserted patents: 8,824,434, 8,842,653, 8,982,863, 9,084,291, 9,019,946, 9,191,083, 9,319,075, and 9,614,943. Defendants have identified only key terms requiring construction. For most terms, Defendants’ constructions reflect the plain and ordinary meaning to one of ordinary skill in the art as informed by the intrinsic evidence. Where Defendants’ constructions depart from the ordinary meaning, it is only because the disputed claim term is (1) used in the intrinsic record in a way inconsistent with its ordinary meaning, or (2) indefinite.

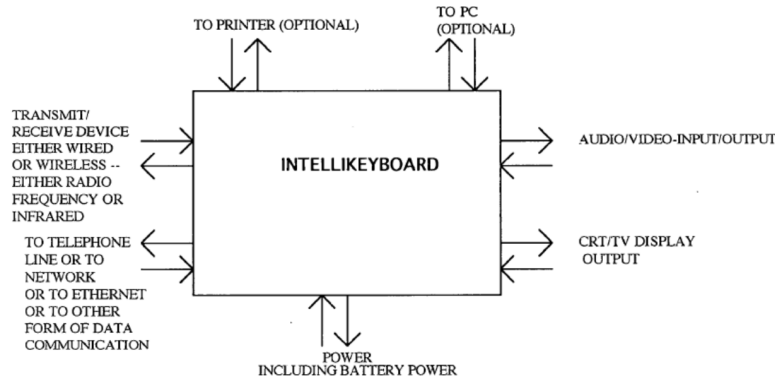
SMT’s proposed constructions are, in contrast, untethered to the intrinsic record. SMT’s goal is obvious—to expand the asserted claims’ scope well beyond their purely aspirational 1990’s era specifications to encompass features and technologies not even imaginable to (and certainly not enabled by) the inventors. But that goal requires SMT to assert constructions that consistently cut against fundamental canons of construction and, as such, the Court should decline to adopt them.

## **II. OVERVIEW OF THE ASSERTED PATENTS**

All 14 asserted patents stem from an abandoned application filed December 16, 1996 (08/764,903) (“the ‘1996 application’”), although some asserted patents truncated their priority claims to remove reference to the 1996 application. Notably, over 50 applications claim priority to that 1996 application.

As a threshold matter, the 1996 application has little, if anything, to do with modern wireless telecommunications. It instead describes the purported invention as an “intelligent

keyboard” or “Intellikeyboard” that allegedly addresses a “need for one single universal, handheld, lightweight, transportable, intelligent device that can compute, command, and control ... intelligent devices,” such as “[i]ntelligent telephony, appliances, devices, and equipment.” Ex. 16 at SM0000123.



*Id.*, Figure 1 (SM0000152). The Intellikeyboard purportedly “leverages the tremendous power of both the Intranet and Internet” using functional blocks “implemented using standard ... or custom ... components by those knowledgeable in the art.” *Id.*, SM0000123.

The inventors abandoned the 1996 application in favor of a continuation-in-part (CIP) application (09/281,739), filed June 4, 1999 (“the 1999 application”). On June 9, 2000, application no. 09/591,381 was filed as a CIP of the 1999 application and included an overhauled specification (“the 6/2000 application”). The asserted patents addressed in the ’501 family brief appear to be based on this specification.

On July 17, 2000, application no. 09/617,608 (“the 7/2000 application”) was filed as a CIP of the 1999 application, which included yet another overhauled specification as compared to the 1996 application. Asserted patents 8,824,434, 8,842,653, 8,982,863, 9,084,291, 9,019,946, 9,191,083, 9,319,075, and 9,614,943 (“the ’434 patent family”) (along with many other unasserted patents) appear to use or rely on the same or similar specification as the 7/2000 specification. However, like the 1996 and 1999 applications, the 7/2000 application provided little disclosure of

how to achieve the alleged inventions. The 7/2000 application discloses a method and apparatus in which multiple IP based wireless data transmissions are simultaneously provided between a wireless device and a server, including providing multiple antennas, multiple T/R units, multiple processors, and multiple I/O ports on the wireless device. Ex. 19 at SM0000634. The 7/2000 application discloses that the purported invention provides wireless enhancements to IP based cellular telephones/mobile wireless devices by having multiple antennas. *Id.* at SM0000608. The 7/2000 application further discloses that “[i]n the present invention, one or more antennas and T/R units in a CT/MD will provide better tuning and greater bandwidth for a given frequency/application.” *Id.* at SM0000610.

For example, the 7/2000 application discloses a dual antenna, dual T/R unit CT/MD which illustrates the purported inventions in a dual band system. *Id.* at SM0000613. The 7/2000 application alleges that having more than one T/R unit gives a performance edge as each signal can be better processed and tuned to the specific frequency band. *Id.* at SM0000614.

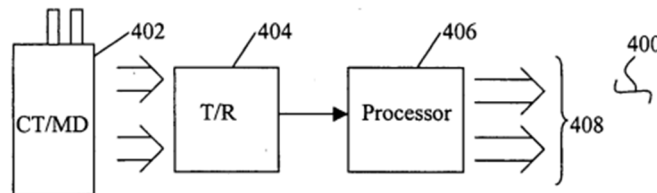


FIG. 4

*Id.* at Fig. 4 (SM0000603).

This is also disclosed in the specification of the '434 family patents. The 7/2000 application discloses that “[s]ome unique features of the present invention, which apply to either a CT/MD ... or to a network switch box ... are: Multiple antennas for greater signal range and bandwidth. Multiple T/R units so that paths or tasks can be paralleled. Multiple internal signal processors, or one or more processors that execute in parallel. Multiple built in input/outputs for universal connectivity to different network environments. Capability to interface wired and

wireless devices through a cradle adapter to achieve universal connectivity. Parallel processing of signals and data streams at a system level using hardware and software on a server such as Server C 706.” *Id.* at SM0000618-19.

### III. LEVEL OF ORDINARY SKILL

A person of ordinary skill (“POSITA”) in the field of the ’434 patent family would have had a Bachelor’s degree in electrical engineering, computer engineering, computer science, or a related field, and at least two years of experience related to the design or development of wireless communication systems, or the equivalent. Additional graduate education could substitute for professional experience, or significant experience in the field could substitute for formal education.

### IV. DISPUTED TERMS

#### A. “system on a chip” 291 (5, 15)

Defendants’ Proposed Construction	SMT’s Proposed Construction
Plain and ordinary meaning.	An integrated circuit that integrates multiple components, including a central processing unit, on a single chip.

The term “system on a chip” has a clear meaning to a POSITA. So common, in fact, that “system on a chip” goes by the well-known abbreviation “SOC,” and both the full term and its abbreviation are routinely and interchangeably invoked to identify a specific component found in electronic devices. Ex. 1 (Bims Decl.) ¶¶ 69-75 (providing an opinion that a system on a chip is a single chip that contains an entire system, citing Ex. 30, NEWTON’S TELECOM DICTIONARY (2000) 817 (“SOC System-On-a-Chip. A silicon integrated circuit which combines generic functions ... with custom design elements to create a device that contains all major elements of system on one integrated chip.”)). Because this term conveys a clear meaning to a POSITA, it requires no further construction as the bounds of a “system on a chip” would be clear to a fact finder. Any attempt to construe the term would do nothing to further illuminate its meaning and would only invite juror

confusion. *United States Surgical Corp. v. Ethicon, Inc.*, 103 F.3d 1554, 1568 (Fed. Cir. 1997) (“Claim construction is a matter of resolution of disputed meanings and technical scope, to clarify and when necessary to explain what the patentee covered by the claims, for use in the determination of infringement. It is not an obligatory exercise in redundancy.”).

SMT provides a construction that would result in the very type of juror confusion that *Ethicon* cautions should be avoided against. While a POSITA would understand a “system on a chip” to refer to a system that is on a chip, SMT’s construction would **include** configurations that conventionally **are not** considered a “system on a chip” (e.g., a processor and at least one other component, regardless of whether those components are an entire system or even part of the same system, so long as the processor and that component are on the same chip). SMT’s construction would also **exclude** configurations that conventionally **are** considered a “system on a chip” (such as any chip that contains a single processor that implements the entire system, with no other components).

SMT provides no explanation for why the Court should depart from the well-known plain meaning. SMT’s proposal should be rejected.

**B. “A communication system including one or more communication modules and processors for use in a portable handheld mobile device with a plurality of antennas, said communication system implemented as a system on a chip, said system comprising:” 291 (5)**

Defendants’ Proposed Construction	SMT’s Proposed Construction
The preamble is limiting	Plain meaning, with the exception of “system on a chip,” which should be construed as proposed by Smart Mobile.

The parties’ dispute is whether the preamble of claim 5 from the ’291 patent is limiting. Defendants contend that it is for a straightforward reason: the preamble gives life, meaning, and

vitality to the claim, and critically, serves as antecedent basis for subsequent claim limitations. SMT contends otherwise, but nevertheless agrees that part of the preamble is limiting.

Whether a preamble is limiting is “determined on the facts of each case in light of the overall form of the claim, and the invention as described in the specification and illuminated in the prosecution history.” *Applied Materials, Inc. v. Advanced Semiconductor Materials Am., Inc.*, 98 F.3d 1563, 1572-73 (Fed. Cir. 1996). A preamble may be limiting if it recites essential structure or steps, or if it is necessary to give life, meaning, and vitality to the claim. *Lemoine v. Mossberg Corp.*, No. 2020-2140, 2021 U.S. App. LEXIS 27807, at \*4-5 (Fed. Cir. Sep. 15, 2021) (citing *Pitney Bowes, Inc. v. Hewlett-Packard Co.*, 182 F.3d 1298, 1305 (Fed. Cir. 1999)). One such example is where the preamble provides antecedent basis for subsequent language in the claims. *Catalina Mktg. Int’l, Inc. v. Coolsavings.com, Inc.*, 289 F.3d 801, 808 (Fed. Cir. 2002) (“[D]ependence on a particular disputed preamble phrase for antecedent basis may limit claim scope because it indicates a reliance on both the preamble and claim body to define the claimed invention.”).

The claim 5 preamble is limiting because it provides important context for the nature and structure of the invention being claimed, and without the context provided by the preamble it is difficult to make sense of the claims. For example, the preamble introduces the term “communication system,” which includes “one or more communication modules and processors for use in a portable handheld mobile device with a plurality of antennas,” and is “implemented as a system on a chip.” ’291 patent, claim 5. The body of claim 5 then refers back to the communication system, requiring “*the system supports* communication and processing of signals using a plurality of frequency bands and wherein the plurality of signal streams is processed for a specific frequency band”, “*the system [is] configured* to transmit the first signal stream by

simultaneously transmitting the first signal stream using, the plurality of antennas, the first signal stream collectively generated from a first data stream;” “*the system [is] configured* to generate a second data stream by receiving the second signal stream simultaneously using the plurality of antennas and generating the second data stream from the second signal stream;” and “*the system supports* video processing, wireless wide area network communication and local area network communication, and USB communication.” *Id.* Only by referring back to the preamble does the claim provide the context necessary to understand the scope of “the system” set forth in the body of the claim. *See Shoes by Firebug LLC v. Stride Rite Children’s Grp., LLC*, 962 F.3d 1362, 1368 (Fed. Cir. 2020) (“While antecedent basis alone is not determinative of whether a preamble is limiting, use of preamble terms to define positive limitations in the body of claims can evince an inventor’s intent that the preamble limit the scope of the claim.”).

SMT refuses to agree to Defendants’ construction (that the preamble is limiting). But SMT agrees that the term “system on a chip”, which appears only in the preamble of claim 5, is limiting (as confirmed by SMT’s identification of that term requiring construction). SMT cannot have it both ways. It is either limiting or not. As such, SMT’s admission that the preamble is in fact limiting with respect to part of the language (i.e., “system on a chip”) is dispositive here.

**C. “is configured to” 434 (1, 6)<sup>1</sup>**

Defendants’ Proposed Construction	SMT’s Proposed Construction
Plain and ordinary meaning, which is “actually programmed to”	Plain meaning

<sup>1</sup> In addition to claims 1 and 6 of the ’434 patent and any claims that depend from them, the same construction should apply to other claims that include the same phrase, including: ’943 patent claims 1, 5, 8, 12; ’653 patent claims 1, 4, 8, 14, 17, 27; ’946 patent claims 1, 4, 8, 14, 17, 27; ’291 patent claim 5; and 083 patent claims 5, 8, 12, and any claims that depend from them.

Both sides agree that this term should be given its plain meaning, however, it is apparent that the parties require some clarity as to what that plain meaning is.

“Configured to” is a term of drafting art, much like “comprising,” “consisting of,” and “consisting essentially of.” *Radware, Ltd. v. A10 Networks, Inc.*, No. C-13-2021 RMW, 2014 U.S. Dist. LEXIS 55913, at \*40 (N.D. Cal. Apr. 18, 2014) (recognizing “configured to” as a “patent term of art”). Courts have repeatedly confirmed that “configured to” has a narrow meaning compared to the broader phrase “capable of.” *See, e.g., Aspex Eyewear, Inc. v. Marchon Eyewear, Inc.*, 672 F.3d 1335, 1349 (Fed. Cir. 2012) (interpreting “adapted to” and construing it in the “narrow” sense of “configured to” in contrast to the “broader” sense as “capable of”); *Typhoon Touch Techs., Inc. v. Dell, Inc.*, 659 F.3d 1376, 1380 (Fed. Cir. 2011) (construing “memory . . . configured to” as “memory that must perform the recited function”); *SIPCO, LLC v. ABB, Inc.*, No. 6:11-cv-48-LED-JDL, 2012 WL 3112302, at \*11 (E.D. Tex. July 30, 2012) (“[T]he claims mandate that the devices are ‘configured to’ perform particular functions. Interpreting ‘configured to’ as requiring only mere capability would eliminate any meaningful limits to the claims. Accordingly, the Court finds that ‘configured to’ means ‘actually programmed or equipped with hardware or software to.’”). These interpretations are likewise consistent with the ordinary meaning a POSITA would apply to the language “configured to.” Ex. 1 (Bims Decl.) ¶¶ 76-79 (opining that the plain and ordinary meaning of “configured to” is “actually programmed to,” citing Ex. 31, IEEE 100 The Authoritative Dictionary of IEEE Standards Terms (2000), Seventh Edition, 217; Ex. 32, Random House Webster’s Computer & Internet Dictionary (1999), Third Edition, 115 (“configure. To set up a program or computer system for a particular application.”); Ex. 33, BARRON’S DICTIONARY OF COMPUTER AND INTERNET TERMS (1998), Sixth Edition, 103 (“configure. To set up a computer or program to be used in a particular way. Many commercial

software packages have to be configured, or installed; this involves setting them up for a particular machine (including video card and printer) and for a particulate user's preferences.”)).

Defendants' proposed construction matches the definition adopted by multiple courts and is consistent with this plain meaning. *SIPCO*, 2012 WL 3112302, at \*11 (“Accordingly, the Court finds that ‘configured to’ means ‘actually programmed or equipped with hardware or software to.’”); *Polaris PowerLED Tech., LLC v. Samsung Elec. America Inc. et al.*, No. 2:17-cv-715-JRG (Dkt. No. 333), at \*3 (E.D. Tex. June 7, 2019) (similar). This construction is also consistent with how the phrase is used in the claims. Patents in this family employ “configured to” in some instances to reference a particular configuration, while in other instances broader phrases are used to refer to the mere capability of supporting a configuration. *Compare* ’434 patent, claim 1 (“portable handheld wireless device ***is configured to dynamically switch*** between use of the first or second antenna”); *with* ’291 patent, claim 1 (“a multi band network switch box system that is ***capable of operating in a number of network environments sequentially or simultaneously***”). Indeed, in some instances, the same claim uses “configured to” and “capable of”—confirming that the applicant intended for the two terms to have different scope (consistent with their plain meanings). *See, e.g.*, ’291 patent, claim 1 (using “configured to” and “capable of”).

SMT agrees that the plain and ordinary meaning is appropriate here, but does not identify what that plain and ordinary meaning is, nor has it identified any basis for declining to accept Defendants' interpretation. Because Defendants' proposed construction defines “configured to” consistent with the plain meaning of the phrase and settled case law interpreting the term, it should be adopted.

- D. “wherein a transmission interface is created and wherein said transmission interface uses a plurality of IP enabled interfaces on the mobile device which utilize the plurality of wireless transmit and receive components on the mobile device to enable a single interface comprised of multiplexed signals from the plurality of wireless transmit and receive components” (653 (1)) / “wherein a first interface for transmission is created and wherein said first interface for transmission uses a plurality of interfaces for Internet Protocol communication on the mobile device which utilize the plurality of wireless transmit and receive units on the mobile device to enable a single interface comprised of multiplexed signals from the plurality of wireless transmit and receive units” (946 (1))

Defendants’ Proposed Construction	SMT’s Proposed Construction
Indefinite	Plain meaning, with the exception of “interface/s,” “mobile device” and “multiplexed,” which should be construed as proposed by Smart Mobile.

These disputed terms are found in claim 1 of the ’653 patent and claim 1 of the ’946 patent. The terms are substantively identical, and thus any arguments raised herein with respect to one limitation apply to both. A POSITA would not understand the scope of these terms with reasonable certainty because they use vague, functional terms, and also use those terms in a nonconventional way without any guidance from the patents. Ex. 1 (Bims Decl.) ¶¶ 80-95. Thus, the terms are indefinite.

The first point of ambiguity resides in the subsidiary term “interface” as used throughout the larger disputed claim language. More specifically, each of the disputed terms recite three “interfaces.” The ’653 patent recites 1) a *transmission* interface; 2) an *IP enabled* interface; and 3) a single interface *comprised of multiplexed signals*. The ’946 patent similarly recites 1) an interface *for transmission*; 2) interfaces *for Internet Protocol communication*; and 3) single interface *comprised of multiplexed signals*. According to the literal claim language, the interfaces are different from each other. But it is unclear what the structural differences are between the interfaces because the emphasized language surrounding each “interface” term is functional in

nature, and does not reveal any apparent distinguishing (and thus identifying) structural differences between them.

Most problematic is the third occurrence of “interface,” which is within the term a “single interface comprised of multiplexed signals.” The claim language identifies the “single interface” by a signal format (“multiplexed signal”), but it is not clear what relation that signal format has to the “single interface.” Indeed, a POSITA would not refer to an interface as “comprised of multiplexed signals,” and that nomenclature is nonsensical under any interpretation of “interface” (including the two competing proposals at issue in this brief). For example, SMT’s proposed construction of “interface” has been substituted into the portion of this term that requires the “single interface” (identified using underline):

**Term**

“enable a single interface comprised of multiplexed signals from the plurality of wireless transmit and receive components”

**SMT’s Proposed “Interface” Construction**

“enable a single virtual or physical point of connection between software and/or hardware elements that enables them to interoperate comprised of multiplexed signals from the plurality of wireless transmit and receive components”

The result is a jumbled mess requiring a “virtual or physical point of connection between software and/or hardware elements that enables them to interoperate” to be comprised of “multiplexed signals.”

The applicant also failed to provide any clear description of these specialty “interfaces” in the specification that would help make sense of these terms. The only place the phrases “transmission interface,” “IP enabled interface,” “interface for transmission,” “interfaces for Internet Protocol communication” and “interface comprised of multiplexed signals” are found in the patents is in the claims. Thus, these terms are indefinite because a POSITA would not understand the bounds of the different “interfaces” recited in the term—particularly the reference to a “single interface comprised of multiplexed signals.”

The second point of ambiguity is the relationship between the “transmission” interface and the IP interfaces. To wit, claim 1 of the ’653 patent, requires that the “transmission interface *uses* a plurality of IP enabled interfaces on the mobile device.” ’653 patent, cl. 1 (emphasis added). What is meant by the recited requirement that one functional interface (in this case, the “transmission interface” or the “interface for transmission”) “uses” multiple other functional interfaces (in this case, “a plurality of IP enabled interfaces” or “interfaces for Internet Protocol communication”) is not a matter of common understanding, and at minimum does not convey a reasonably certain meaning to a POSITA. Ex. 1 (Bims Decl.) ¶¶ 87-89. This ambiguity is compounded by an intrinsic record that is conspicuously silent on all of these issues. Claim 1 of the ’946 patent suffers from similar defects, and therefore both terms are indefinite.

The third point of ambiguity is the effect of the “which utilize . . .” language in the disputed term. Claim 1 of the ’653 patent includes the phrase “which utilize the plurality of wireless transmit and receive components.” Claim 1 of the ’946 patent includes a similar phrase. This phrase is intended to modify some preceding subpart of the term, but it is unclear which specific subpart that is. The relevant portion of the term from claim 1 of the ’653 patent is emphasized below:

wherein said transmission interface uses a plurality of IP enabled interfaces on the mobile device *which utilize* the plurality of wireless transmit and receive components on the mobile device

As written, the clause “which utilize . . .” could modify (1) the “mobile device”; (2) the “plurality of IP enabled interfaces”; or (3) the “transmission interface.” The most grammatically correct reading is that the “which utilize . . .” clause modifies the “plurality of IP enabled interfaces”, as “utilize” is a plural verb and “a plurality of IP enabled interfaces” is the only plural noun in the phrase. If that were the case, the term would require that the IP enabled interfaces use multiple transmit and receive components together to enable a single interface—or in other words,

the “single interface” is comprised of the multiple “transmit and receive components.” But this interpretation would conflict with the remainder of the term, which indicates that the “single interface” is separate from the “transmit and receive components” (because it receives signals from those components). Again, the term in claim 1 of the ’946 patent suffers from similar defects, and the intrinsic record is silent on this issue in both patents.

The fourth point of ambiguity is the usage of the word “single” in the requirement for a “single interface.” In both patents, one potential read of the plain language is the mobile device has a “single” (one, and only one) interface that is comprised of multiplexed signals. Another potential interpretation is that all of the wireless transmit and receive units on the mobile device enable a “single” (one, and only one) interface within the device. Either interpretation is plausible, but the specification fails to address or inform either outcome, which leaves a POSITA (and anyone else reading the claim) to choose between two competing interpretations that each yield an “interface” structure with strikingly different topologies from the other.

Any of these ambiguities by itself renders this claim indefinite. Because all four are present, there is additional ambiguity in the terms, leaving a POSITA to speculate as to what specific structures are included, how they are related (if at all), how they are different (if at all), and how they work together.

**E. “wherein the first wireless transmit and receive component is enabled to communicate using one or more antennas simultaneously/ wherein the first wireless transmit and receive unit is enabled to communicate using one or more antennas simultaneously” 653 (14), 946 (14)**

Defendants’ Proposed Construction	SMT’s Proposed Construction
Indefinite	Plain meaning.

Each claim-at-issue recites a “wireless transmit and receive component” that “is enabled to communicate *using one or more antennas simultaneously*.” However, that language is indefinite because when “read in light of the specification delineating the patent, and the prosecution history, [it] fail[s] to inform, with reasonable certainty, those skilled in the art about the scope of the invention.” *Nautilus, Inc. v. Biosig Instruments, Inc.*, 572 U.S. 898, 901, 134 S. Ct. 2120, 2124 (2014).

In particular, a POSITA would not understand what it means to “use one or more antennas simultaneously.” Ex. 1 (Bims Decl.) ¶¶ 96-100. The claim language provides no helpful context. It cannot be the case that the claim is referring to simultaneous communication using multiple antennas, because the scope of the claim contemplates using “one” antennas. *See* ’653 patent, claim 14. It also cannot be the case that the claim is referring to using multiple wireless transmit and receive components at the same time, because the claim’s literal scope contemplates a single unit. It also cannot be the case that the claims are referring to using sending data and receiving data at the same time, because that is recited elsewhere in the claims. *Id.* at claim 15 (dependent claim which requires “simultaneous communication paths” between a server and a device).

Nor does the specification clarify the facially indeterminate “using one [] antenna simultaneously” limitation. The patents do not describe a scenario where one antenna is used for some sort of “simultaneous” communication. To the contrary, the patents include examples of simultaneous communications, but only where the device is using multiple transmit and receive units *and* multiple antennas. *E.g.*, ’653 patent, 6:26-29 (“The multiple T/R units and antennas 710 allow multiple simultaneous communication paths over connection 704 between the CT/MD and the Server C such that the communication rate is increased.”). At no point does the specification explain what it means to use one transmit and receive unit and one antenna simultaneously.

To the extent SMT argues that the “using...simultaneously” limitation simply means the device uses **multiple** antennas or **multiple** transmit and receive units simultaneously, that argument cannot save its claims from indefiniteness. SMT would be asking the Court to rewrite the claim language, which the Court cannot do. *See, e.g., Chef Am., Inc. v. Lamb-Weston, Inc.*, 358 F.3d 1371, 1373 (Fed. Cir. 2004) (finding it impermissible to rewrite a claim requiring heating dough “to” 400° F to require heating dough “at” 400° F, even the claim as written was nonsensical). Indeed, the specific language used in these terms appears deliberate, as SMT elsewhere claims the use of multiple T/R units and multiple antennas—but chose different language in the terms at issue. *See, e.g.*, ’653 patent, cl. 9 (“the use of two or more wireless transmit and receive units . . .”); *id.* at cl. 14 (“at least two or more antennas . . .”); cl. 17 (“communicate using a plurality of antennas . . .”).

For these reasons, Defendants contend that these terms are indefinite.

#### F. “USB communication” 291 (5), 946 (5)

Defendants’ Proposed Construction	SMT’s Proposed Construction
USB technology at use at the time of filing (1999) <sup>2</sup>	Plain meaning.

The meaning of “USB communication” is its meaning when the inventors filed the earliest related patent application. “[T]he ordinary and customary meaning of a claim term is the meaning that the term *would have to a person of ordinary skill in the art in question at the time of the invention, i.e., as of the effective filing date of the patent application.*” *Phillips*, 415 F.3d at 1313 (emphasis added); *see Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 986 (Fed. Cir. 1995)

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<sup>2</sup> Defendants amend their proposed construction from USB technology at use at the time of filing (1996) to USB technology at use at the time of filing (1999).

(“[T]he focus is on the objective test of what one of ordinary skill in the art at the time of the invention would have understood the term to mean.”).

In the context of standardized terms, the general rule is that the standard must include the standard at issue at the time of the effective filing date of the patent application. *Fundamental Innovation Sys. Int’l LLC v. Samsung Elecs. Co.*, Case No. 2:17-cv-145-JRG-RSP, 2018 WL 647734, at \*11 (E.D. Tex. Jan. 31, 2018) (citation omitted) (“[T]he term ‘USB’ in the patents-in-suit should be limited to the Universal Serial Bus standards that existed at the time of the claimed invention.”); *Uniloc USA, Inc. v. Apple, Inc.*, No. 19-cv-1692, 2021 WL 432183, at \*8 (N.D. Cal. Jan. 15, 2021) (report and recommendation finding that terms “Bluetooth messaging” and “Bluetooth protocols” should be limited to functionality described in the Bluetooth Core Specification “as it existed at the time of the claimed invention”).

Here, the ’291 patent traces back to a patent application filed on June 4, 1999. ’291 patent, (63);’946 patent, (63). The relevant meaning of the term “USB communication” is the meaning it had as of June 4, 1999, at the latest. *Fundamental Innovation*, 2018 WL 647734, at \*9 (“An invention cannot comply with standards not yet in existence.”). Thus, a POSITA would have understood the patent’s references to “USB communication” to mean USB technology at use at the time of filing (which was USB 1.1).

#### **G. “dynamically” 434 (1)**

<b>Defendants’ Proposed Construction</b>	<b>SMT’s Proposed Construction</b>
Indefinite.	When and as needed, responsive to variable conditions and without the need for user intervention.

The ’434 patent claim 1 recites a “portable handheld wireless device [that] is configured to dynamically switch between use of the first or second antenna.” *See, e.g.*, ’434 patent, claim 1.

The claim and specification use the term “dynamically,” but they provide no guidance for what this actually means. A POSITA would thus have no way to assess whether a particular action is “dynamic” or not in the context of these claims. Accordingly, they are indefinite. Ex. 1 (Bims Decl.) ¶¶ 33-37.

Neither the plain and ordinary meaning of “dynamic” nor the specification resolves this ambiguity in claim scope. Dictionaries define “dynamic” in various ways but, most commonly, as events that are “constantly changing” or as something that is “energetic” or “forceful.”<sup>3</sup> See Ex. 27 (NEWTON’S TELECOM DICTIONARY, 11<sup>th</sup> Ed. 207 (“Events are constantly changing.”)); Ex. 28 (THE CONCISE OXFORD DICT. OF CURRENT ENGLISH 424 (“energetic; active; potent.”)); Ex. 29 (THE AM. HERITAGE DICT. OF THE ENGLISH LANGUAGE 574 (“Marked by intensity and vigor; forceful.”)). Neither description applies or is useful here. The actions the claim and specification describe as “dynamic” are not constantly changing; they are triggered by specific events. Claim 1 recites dynamically “switch[ing]” between use of the first or second antenna. See, e.g., ’434 patent, claim 1. But, the specification does not describe this switching at all. Finally, SMT’s construction is unsupported. The specification does not describe “dynamic” conversion (or other actions the claims recite as “dynamic”) as performed “without the need for user intervention.”

**H. “ports” (’653 (15, 27, 28), ’863 (1), ’291 (6, 7, 11), ’946 (14, 15, 28, 29), ’083 (1), ’075 (1))**

Defendants’ Proposed Construction	SMT’s Proposed Construction
Plain and ordinary meaning, which is a jack or socket that a cable connector plugs into	A virtual or physical point of connection through which information may be transferred.

<sup>3</sup> Moreover, a construction of “dynamic” as “constantly changing” or “energetic” or “forceful” would itself be indefinite, as there would be no reasonable certainty about what those labels mean in the context of the claims at issue, either.

The plain meaning of “ports,” when read in light of the intrinsic evidence, is “a jack or socket that a cable connector plugs into.” Defendants seek to adopt this plain meaning as their construction. On the other hand, SMT seeks to include *virtual* points of connection, despite a lack of evidence that the inventors ever considered any non-physical point of connection to fall within the scope of “ports.” SMT’s proposed construction is unsupported by the intrinsic record and should be rejected.<sup>4</sup> *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312 (Fed. Cir. 2005) (en banc), quoting *Multiform Desiccants, Inc. v. Medzam, Ltd.*, 133 F.3d 1473, 1477 (Fed. Cir. 1998) (“The best source for understanding a technical term is the specification from which it arose ... .”); *id.* at 1313, quoting *Medrad, Inc. v. MRI Devices Corp.*, 401 F.3d 1313, 1319 (Fed. Cir. 2005) (“We cannot look at the ordinary meaning of the term ... in a vacuum. Rather, we must look at the ordinary meaning in the context of the written description and the prosecution history.”); *see also AstraZeneca AB v. Mylan Pharms. Inc.*, 19 F.4th 1325, 1330 (Fed. Cir. 2021).

Starting with the intrinsic record, it is apparent that “ports” refers to a physical connection (as set forth in the plain and ordinary meaning of that term and Defendants’ proposed construction). Every description of “ports” in the specification refers only to physical input/output (“I/O”) connections between devices, such as a jack or socket that a cable connector plugs into, and *never* virtual points of connection. For example (emphasis added in all citations):

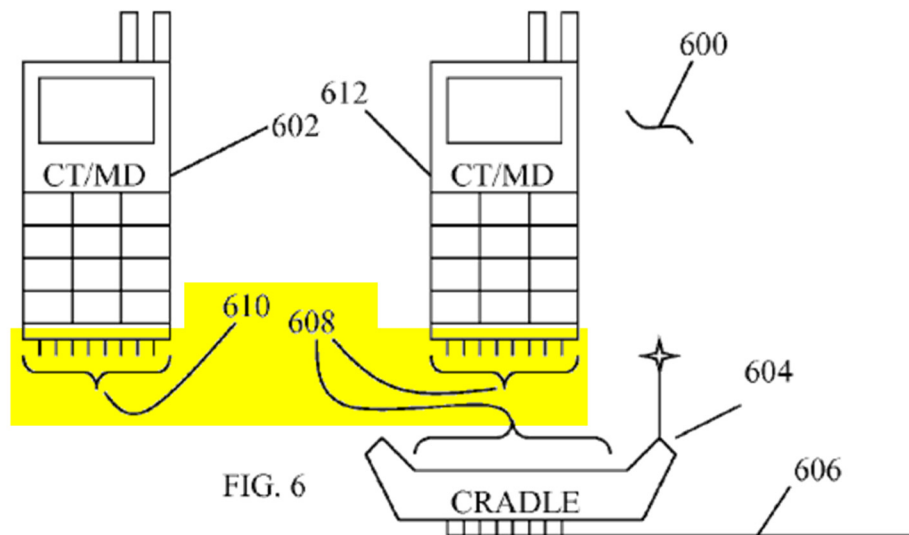
- “In addition to the *multiple I/O ports 610* shown on the CT/MD 602 and the *ports 608 shown for connecting the CT/MD 612 to cradle adapter 604*, the present invention anticipates *a universal port and a universal connector*. By having the signal path selection done by user defined menu driven software and *multiplexing the signals onto a universal input/output port as opposed to the multiple ports 608, 610 or wired connections 606*, the desired *signals are delivered to the universal port.*” ’653 patent, 5:59-67.

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<sup>4</sup> The term appears in asserted claims of the ’653, ’863, ’291, 946, ’083, and ’075 patents, all of which share the same specification. Thus, this brief cites to the ’653 patent for this term, but those citations are representative.

- “The enabling attachment can make any non-wireless device (NWD) unit 613 wireless enabled *while being plugged into the cradle adapter 604*, as shown for CT/MD 612, *to access a number of wired, optical or wireless communication paths through the ports 608.*” *Id.* at 6:4-8.
- “The cradle adapter may also contain *power ports for the individual devices in addition to the I/O ports.*” *Id.* at 6:12-14.
- “A CT/MD that has *multiple input/output ports as opposed to a single input/output (I/O) port* as in the prior art. The CT/MD may have a *universal serial bus (USB) port, a coaxial cable port, a standard telephone (POTS) port, a twisted pair port, Ethernet port, and most importantly an optical port.* The CT/MD thus can fully interface and interact with different environments sequentially or simultaneously. The feature is more than one port being available with variations in the number of ports (I/O) from one to N.” *Id.* at 9:21-29.
- “The processor contained within the CT/MD 502 is further capable of delivering the required outputs to *a number of different ports such as optical, USB, cable and others* such as 1202 to 1210.” *Id.* at 4:60-63.
- “FIG. 4 illustrates a *dual antenna, dual T/R unit* in the CT/MD of the present invention in a dual band system 400. In FIG. 4, this scheme with CT/MD 402 transmitting on the dual T/R unit 404 allows the internal processor 406 to independently process the *two incoming signal streams* separately and optimally, causing the appropriate output to be *delivered on the desired output port.*” *Id.* at 4:14-20.
- “However, the network switch box may be portable and may be used in the wireless mode only in a wireless network or it may also be connected to one or more networks by *wired and wireless means to fully leverage all the input/output ports.*” *Id.* at 5:16-20.
- “In FIG. 5B, network switch box 552 that is limited in quality because of the limitations of wireless may fully leverage the networks, including fibre optic networks, such as by *multiple antennas 554 and multiple I/O ports 556.*” *Id.* at 5:21-24.
- “In FIG. 6, a wireless device, CT/MD 602 with *I/O ports 610* and CT/MD 612 with the ability to interface through a cradle adapter 604 having both wireless and wired connections 606 interfacing with *multiple input/output (I/O) ports 608* is shown.” *Id.* at 5:48-52.

Figure 6, too, pictorially depicts “ports” as plugs or pins 608 and 610 that connect into a cradle adapter (annotation added):



There are numerous additional citations in the specification that all confirm the same: the term “ports” always appears in the context of describing physical input/output (“I/O”) connections between devices, such as a jack or socket that a cable connector plugs into, thus confirming Defendants’ construction. Critically, there are *no* disclosures in the specification or the file histories for the ’653, ’863, ’291, 946, ’083, and ’075 patents of “ports” including virtual points of connection. *Eon-net LP v. Flagstar Bancorp.*, 653 F.3d 1314, 1323 (Fed. Cir. 2011) (holding that the construction of “document” was limited to “hard copy documents” because the specification referred to hard-copy documents more than 100 times).

These citations are not limited to a preferred embodiment. Rather, the patents use the “present invention” to refer to the usage of hardware ports between physical devices:

The *present invention* includes the following features:

...

(4) A CT/MD that has multiple input/output ports as opposed to a single input/output (I/O) port as in the prior art. The CT/MD may have a universal serial bus (USB) port, a coaxial cable port, a standard telephone (POTS) port, a twisted pair port, Ethernet port, and most importantly an optical port. The CT/MD thus can fully interface and interact with different environments sequentially or simultaneously. The feature is more than one port being available with variations in the number of ports (I/O) from one to N.

'653 patent, 8:65-9:26 (emphasis added). While the specific type of port (e.g., USB vs. coaxial) is not critical, the patent notes the use of a “universal port,” which allows for all types of communications (including wireless) by inserting a “universal connector” into the “universal port”:

In addition to the multiple I/O ports 610 shown on the CT/MD 602 and the ports 608 shown for connecting the CT/MD 612 to cradle adapter 604, *the present invention anticipates a universal port and a universal connector.* . .

'653 patent, 5:59-67.

Thus, by describing “[t]he present invention” as using hardware ports, the patentee required that those elements be included in the claims. The Federal Circuit has repeatedly enforced this principle, holding that when the patentee describes the invention as a whole, the disclosed elements must be included in the claims. *See, e.g., Regents of Univ. of Minn. v. AGA Med. Corp.*, 717 F.3d 929, 936 (Fed. Cir. 2013); *Honeywell Int’l, Inc. v. ITT Indus., Inc.*, 452 F.3d 1312, 1316–19 (Fed. Cir. 2006); *SciMed Life Sys., Inc. v. Advanced Cardiovascular Sys., Inc.*, 242 F.3d 1337, 1343–44 (Fed. Cir. 2001).

Defendants’ plain and ordinary meaning proposal is also consistent with extrinsic evidence. *See, e.g.*, Ex. 42, MICROSOFT COMPUTER DICTIONARY 349 (4th Ed. 1999) (“1. An interface through which data is transferred between a computer and other devices (such as a printer, mouse, keyboard, or monitor), a network, or a direct connection to another computer.”); Ex. 43, CHAMBERS 21<sup>ST</sup> CENTURY DICTIONARY 1081 (1999) (“a socket that connects the CPU of a computer to a peripheral device.”); Ex. 44, MERRIAM-WEBSTER’S COLLEGIATE DICTIONARY 907 (10th Ed., 1997) (“a hardware interface by which a computer communicates with another device or system.”); Ex. 45, THE AUTHORITATIVE DICTIONARY OF IEEE STANDARDS TERMS 844 (2000) (“An input or output connection between a peripheral device and a computer. See also: parallel

port; serial port; mouse port; input-output port.”); Ex. 46, WEBSTER’S NEW WORLD DICTIONARY OF COMPUTER TERMS 421 (8th Ed., 2000) (“An interface that governs and synchronizes the flow of data between the central processing unit (CPU) and external devices such as printers and modems. See parallel port and serial port.”); Ex. 41, CHAMBERS DICTIONARY OF SCIENCE AND TECHNOLOGY 901 (1999) (“point at which signals from peripheral equipment enter the computer”). Although some definitions of “port” may include logical points of connection as an alternative definition, the intrinsic record establishes that the inventors were not contemplating virtual points of connection when using the term “ports,” and “[b]ecause the intrinsic record is clear,” the Court should “not give weight to an inconsistent dictionary definition.” *Digital Biometrics, Inc. v. Identix, Inc.*, 149 F.3d 1335, 1346 (Fed. Cir. 1998).

Finally, SMT’s construction is also problematic because it would render the claims invalid for lack of written description and/or failure to enable the full scope of the claims since the ’653, ’863, ’291, 946, ’083, and ’075 patents fail to disclose the concept of virtual points of connection for the reasons above. *Phillips v. AWH Corp.*, 415 F.3d 1303, 1327 (Fed. Cir. 2005); *see also Trustees of Bos. Univ. v. Everlight Elecs. Co.*, 896 F.3d 1357, 1365 (Fed. Cir. 2018) (citing *Sitrick v. Dreamworks, LLC*, 516 F.3d 993, 999 (Fed. Cir. 2008)). Because the ’653, ’863, ’291, 946, ’083, and ’075 patents fail to teach and enable virtual points of connection, only Defendants’ construction maintains the validity of the asserted claims.

**I. “application” (’434 (2), ’653 (10, 11, 17), ’863 (6, 12), ’291 (12), ’946 (6, 10, 11))**

<b>Defendants’ Proposed Construction</b>	<b>SMT’s Proposed Construction</b>
’168 (2, 4), ’501 (17), ’739 (17) Plain and ordinary meaning, which is use, role or task	A program or group of programs that enables a user to interact with the device to cause the device to perform a task or set of tasks
’168 (5, 19, 22), ’434 (2), ’653 (10, 11, 17), ’863 (6, 12), ’291 (12), ’946 (6, 10, 11) Plain and ordinary meaning, which is a software program designed to assist in the performance of a specific task	

The context of the claims and the specification confirm Defendants’ plain and ordinary meaning positions are correct. SMT’s “one-size-fits-all” proposal across eight patents demonstrates its inexact, hand-waving approach to claim interpretation and an improper attempt to change the scope of their patents to something not contemplated by the inventors.

The parties primarily dispute the meaning of “application” in the ’168 patent’s claims 2 and 4, and the ’501 and ’739 patents’ claim 17, which Defendants address in the separate brief for those patents. As explained in Defendants’ ’501 brief, the specifications of the asserted patents use “application” consistent with a use, role, or task to which the device might be put, rather than the software program designed assist in performance of that use, role, or task. *See, e.g.*, ’653 patent, 5:35-36 (“This provides the network switch box 552 single unit to have universal applications”), 9:58-59 (“use the same CT/MD in different environments and applications”). However, for the patents addressed in this brief, like the ’168 patent claims 5, 19, 22, the applicant introduced claims during prosecution that used “application” consistent with a plain meaning that is a software program designed to assist in the performance of a specific task. For example, ’653 claim 11 and ’946 claim 11 recite “an application *executed by* the processor,” ’653 claim 17 and ’946 claim 6 recite an “interface to one or more applications *on* the mobile device.” In the context of the claims, even though the specification does not use the term “application” to refer to software

that can be downloaded, a POSITA would have recognized the claims used “application” consistent with the ordinary meaning to refer to a software program designed to assist in the performance of a specific task, and not the task itself.

Defendants’ plain and ordinary meaning positions are also supported by extrinsic evidence, which defines “application” consistently as having a different meaning depending on the context in which the term is used, namely, (1) use, role, or task, or (2) a software program designed to assist in the performance of a specific task. *See, e.g.*, Ex. 29, THE AMERICAN HERITAGE DICTIONARY OF THE ENGLISH LANGUAGE 89 (3d ed. 1996) (“The act of putting something to a special use or purpose ... A specific use to which something is put ... Of or being a computer program designed for a specific task or use”); Ex. 41, CHAMBERS DICTIONARY OF SCIENCE AND TECHNOLOGY 57 (1999) (“The use of a computer to carry out a specific task, eg [sic] word processing. The term is sometimes used to refer to the software involved in the computer application.”)

SMTs’ proposal also injects additional ambiguity and breadth not contemplated by the plain and ordinary meaning of the term in the context of a “software program,” and should therefore be rejected. First, the language “*or group of programs*” and “*or set of tasks*” adds additional breadth not contemplated by the term or the intrinsic record. Second, this language is inconsistent with the ordinary meaning of the term as it provides no instruction how to determine what the “group” is, and could apply to multiple “tasks,” thereby operating to read the term “application” as indistinct from all “programs” on an entire device. Third, the phrase “enables a user to interact with the device to cause the device to” do something finds no basis in the ordinary meaning of the term or the intrinsic record. Indeed, not all software programs require user

interaction. SMT's proposal should therefore be rejected, and Defendants' plain and ordinary meaning that is consistent with the claims and specification should be adopted.

**J. “one or more subtasks are assigned to one or more channels” ('943 (1, 5, 8, 12))**

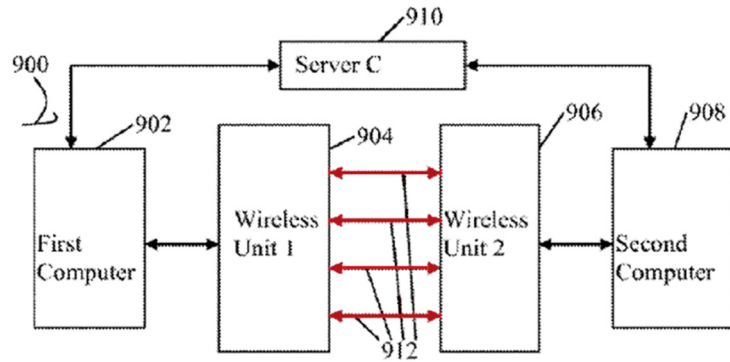
Defendants' Proposed Construction	SMT's Proposed Construction
one or more communication paths between a transmitter and receiver are dedicated to one or more pre-defined subtasks	Plain meaning, with the exception of “subtasks” <sup>5</sup> and “channels,” which should be construed as proposed by Smart Mobile.

Defendants' proposal is based on the only apparent relevant disclosure in the intrinsic record for the disputed term, and therefore is the correct construction. SMT essentially proposes no construction (putting aside the dispute regarding “channel”). But SMT's preliminary infringement contentions demonstrate the ambiguity in the claim and the need for further instruction to the jury as to its context and meaning.

Two teachings are gleaned from the '943 specification: (1) the channel is a “communication path,” such as USB, telephone, cable, fibre optic, or wireless, between a transmitter and receiver, and (2) data relating to tasks or subtasks are assigned or allocated to the different communication paths for transfer over the communication paths so as to “enhance[] the data transfer rate.” The '943 patent describes “an embodiment of the present invention” in which a “computer 902 and computer 908 need to exchange data streams at very fast rates,” but “a single channel for T/R with a single antenna or a single processor would cause a limitation in *data transfer rates, so multiple channels 912 are provided.*” '943 patent, 7:1-6 (emphasis added). As shown in FIG. 9, these “channels 912” are communication paths between the transmitters/receivers (904, 906) of the two computers (902, 908):

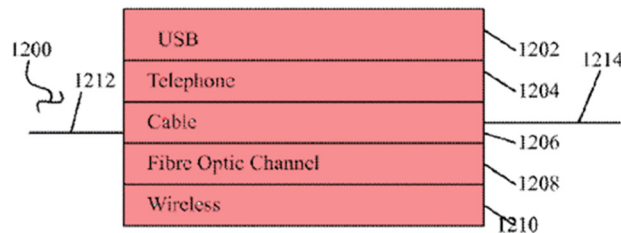
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<sup>5</sup> Defendants understand SMT to have withdrawn their construction of “subtasks.”



'943 patent, Fig. 9 (emphasis added) (showing “channels 912” in red).

The '943 patent further explains “Server C 910 polls the *tasks* by communicating with computer 902 and computer 908, and through computer 902 and computer 908 control the wireless units 904 and 906 ... by *optimally allocating channels and transfers of the data*. Having ***multiple channels*** 912 *enhances the data transfer rate* compared to a single channel or *communication path*. Server C 910 oversees the *allocation of data to the different channels* and keeps the process under control. ... Consequently having the data partitioned by the Server C 910 and *assigned to multiple channels 912* enables parallel processing of the communications” and “increases the data transfer rate.” '943 patent, 7:6-25. The '943 patent similarly describes in reference to FIG. 12 “multiple communications channels such as USB 1202, telephone 1204, cable 1206, fibre optic channel 1208, and wireless 1210 are all employed to communicate data relating to *tasks and subtasks* from data path 1212, such as from Server C 1130, to data path 1214.” '943 patent, 8:19-23.



'943 patent, FIG. 12 (emphasis added) (showing “channels” 1202-1210 in red).

Indeed, the alleged improvement of *data transfer rate* emphasized by the inventors refers to the transfer across the communication paths between transmitters/receivers using multiple channels, and *optimization* by allocating or dedicating each channel to a particular task. '943 patent, 7:6-25.

The specification of the 1999 application (09/281,739, issued as 6,169,789 (“the ’789 patent”)) to which the ’943 patent claims priority (and therefore allegedly discloses the claimed devices of the ’943 patent) further confirms this understanding and supports Defendants’ construction. First, the ’789 patent disclosure consistently refers to channels as “input/output” or “input and output” channels (3:57-61, 4:2-5, 5:8-13, 10:31-34, 12:42-46, 12:55-57), and further states that “[t]he transmit/receive can be either single or *multichannel*. *This means* that the transmit/receive device which is built in to the Intellikeyboard can receive all of its input from the Intellikeyboard or it can receive many different *inputs from various intelligent appliances and peripherals simultaneously or sequentially*.” Ex. 18, ’789 patent, 20:44-48 (emphasis added). This confirms the “channels” are communication paths between a transmitter and receiver. Second, the priority specification does not refer to “assigning” or even “allocating” tasks or subtasks. However, that disclosure states:

It is also possible to define and *dedicate certain channels for various pre-defined or programmable tasks only*. The embedded transmitter/receiver function and the central multichannel multiplexing transmitter/receiver can be built to have a combination of various *input and output channels* with and without multiplexing capability. The basic concept of how these electronic functional blocks can be executed at either the board level or chip level is described. As an example, a quad-in and quad-out transmitter/receiver can have *one channel dedicated for telephony, another channel dedicated for TV, another channel for printers, and a channel for security* or it is possible to have certain channel multiplexed for use by a number of intelligent appliances.

*Id.*, 14:25-38 (emphasis added), *see also* 16:66-17:15 (“the multichannel multiplexing transmitter/receiver is described with four channels, one channel being dedicated for two-way communication with the Intellikeyboard, another channel dedicated for two-way communication with the network server, and two other channels each dedicated for two communication with two different intelligent appliances.”) This description further confirms to the person of ordinary skill, having considered the intrinsic record, that the “assignment” in the disputed term is an exclusive dedication of a communication path to one or more pre-defined subtasks, such as telephony, TV, printers, or security, as reflected in Defendants’ proposal.

SMT’s infringement contentions, however, appear to turn this limitation on its head. SMT alleges that subtasks are nothing like telephony, TV, or security that can be assigned for transmission *over* the communication channels, but instead are processes *performed by the device’s processor* that only bear a tangential relationship to the communication channels between the transmitter and receiver. Ex. 54, SMT’s ’943 Patent Prel. Infr. Cont. Against Apple, Ex. L, at 10 (“subtasks assigned to this process flow are assigned to the Wi-Fi channel”). But this interpretation finds no basis in the intrinsic record and is inconsistent with the purported advantages of the alleged invention discussed above. This includes the improvement of *data transfer rates* across the communication paths between transmitters/receivers using multiple communication channels, and *optimization* by allocating or dedicating each of those communication channels to a particular task. ’943 patent, 7:6-25. Defendants’ construction, which clarifies the claim consistent with the intrinsic record, should be adopted to address SMT’s misapplication of the claim that is inconsistent with the intrinsic record.

**K. “channel” (’943 (1, 5, 8, 12), ’083 (1, 2, 5, 8, 12))**

Defendants’ Proposed Construction	SMT’s Proposed Construction
Plain and ordinary meaning, which is communication path between a transmitter and receiver	A path or link through which information passes between or within one or more devices or components

Defendants’ plain and ordinary meaning is consistent with the claim language and intrinsic record, and therefore is correct. SMT’s proposal, like many of its other proposals, is an attempt to broaden the term and the claims beyond the meaning contemplated by the inventors and adds ambiguity, and therefore should be rejected.

The plain and ordinary meaning of a “channel” is a communication path between a transmitter and receiver. The Electrical Engineering Handbook, for example, teaches that “[t]he communication channel is the set of devices and systems that connects the transmitter to the receiver.” Ex. 47, THE ELECTRICAL ENGINEERING HANDBOOK 1671-72 (Richard C. Dorf, ed., 2d ed. 1997).

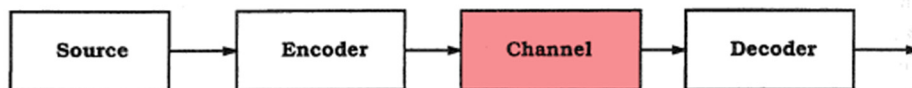


FIGURE 73.13 Elements of a communication system.

*Id.* Similarly, The Communications Handbook states “[a] *channel* is the bridge between a source and a receiver (sink).” Ex. 48, THE COMMUNICATIONS HANDBOOK 87 (Jerry D. Gibson, ed., 1996).

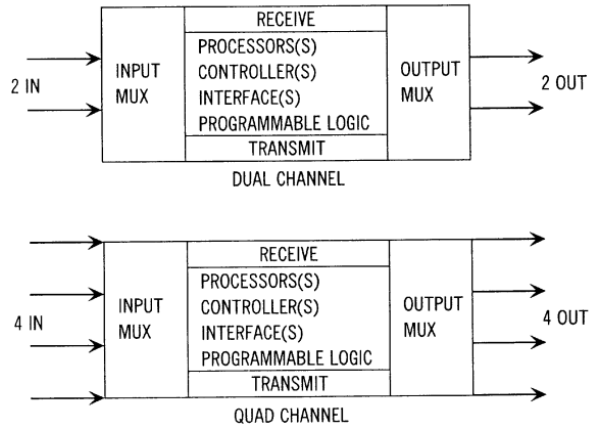
Both of the patents at issue here use “channel” in the claims consistent with that plain and ordinary meaning. Claim 5 from the ’083 patent recites “multiplex wireless *communication* of a plurality of signals using one or more *channels*,” and claim 12 recites a similar phrase referencing “communication of wireless signals.” The claims of the ’943 patent refer to “sampling” channels, which are procedures performed on communication paths. *See, e.g.*, ’943 patent, cl. 1 (“the one or more channels are sampled and clocked individually”).

The intrinsic record is also consistent with that plain and ordinary meaning. For example, as explained in the discussion of the “channel” term above, the priority specification (published as the ’789 patent)<sup>6</sup> consistently uses “channel” to refer to input/output channels between a transmitter and receiver.

SMT proposes that the claimed channel can be “a path or link through which information passes between or within one or more devices or components,” but this ambiguous definition is inconsistent with the ordinary meaning and the intrinsic record. First, SMT’s suggestion that the “channels” could be wholly within a processor is incorrect. As discussed above, the ordinary meaning of “channel” and the intrinsic record inform a POSITA that the term refers to a communication path between a transmitter and receiver, not a path or link wholly *within* a component. *See supra* (citing ’789 Patent). Although the ’789 patent states in one instance “when four channel capabilities are desired, four separate processors may be used or a four channel monolithic processor specifically designed for this purpose may be used,” the reference to “four channel(s)” is to four input channels--not channels that are within the processor. In other words, the processor is capable of processing data received on four *input* paths. This understanding is further confirmed by FIG. 6, which labels a “DUAL CHANNEL” device as one with two inputs/two outputs, and a “QUAD CHANNEL” device as one with four inputs/four outputs:

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<sup>6</sup> The ’083 patent was filed as a continuation of the application that issued as the ’943 patent, and claimed priority to the 09/281,739 application (issued as 6,169,789). However, the applicant later revised its priority claim to remove the reference to the 09/281,739 application.



Ex. 18, '789 patent, FIG. 6 (excerpt), *see also* 13:24-26 (“In dual channel configuration, the multiplexing transmit/receive device has two inputs and two outputs”).

Furthermore, during prosecution of the '083 patent, independent claims 1, 5, and 12 were amended in relation to the term “channel.” Ex. 25, '083 FH, SM0003863-69. The applicant argued “according to one further aspect of the amended claims, processing of signals of multiple channels is enabled, including a first data stream and a second data stream in parallel.” *Id.* at SM0003872. This is again consistent with the understanding that the signals being processed are signals from multiple communication paths between a transmitter and receiver, not processing *on* paths *within* a processor. Also, the examiner, in allowing claim 12, relied on, *inter alia*, the phrase “received via multiple channels,” which also confirms the examiner understood the term to refer to a communication path between a transmitter and receiver, even though the previous amendment removed the term “received.” *Id.*, SM0003825-26.

Second, the language “path or link *through which information passes*” appears to be an attempt by SMT to expand the claimed “channels” to merely a path that information happens to take. But this is wrong, because the claims and intrinsic record tell us a channel is a path like a cable or fibre optic channel that can be assigned a subtask such as telephony or TV to “enhance[] the data transfer rate.” *See, e.g.*, '943 patent, 7:6-25, 8:19-23, FIGs. 9, 12; Ex. 18, '789 patent,

14:25-38. By way of analogy, a hiking trail is not merely any path a hiker happens to take through a forest. Moreover, identifying *post hoc* a path or link that information happens to take through a device as a “channel” would operate to remove the term “channel” from the claim.

For these reasons, Defendants’ construction should be adopted and SMT’s proposed construction should be rejected.

**L. “the device is ... further configured with enhanced capabilities to differentiate between various signals or to combine multiple paths into a single communication channel” (’943 (2))**

Defendants’ Proposed Construction	SMT’s Proposed Construction
Indefinite	Plain meaning, with the exception of “multiplex” and “channel,” which should be construed as proposed by Smart Mobile.

The term “enhanced” is a term of degree, and the ’943 patent fails to provide sufficient guidance to provide a POSITA reasonable certainty as to the scope of the claim. The disputed term is therefore indefinite. Only two instances in the specification suggest what could provide the claimed “enhanced capabilities: (1) “The typical CT/MD has one transmitter and one receiver (T/R), with one antenna. An unfulfilled need exists for multiple T/R in a CT/MD, providing enhanced capabilities, and the multiple T/R capabilities will often be best met with *multiple antennas*” (’943 patent, 1:47-51); (2) “Adding *additional antennas* gives the CT/MD (by extension the same is true for the network switch box) enhanced capabilities to differentiate between various signals or to combine multiple paths into a single communication channel.” ’943 patent, 4:7-11 (emphasis added, claim language underlined). In other words, the only teaching in the specification as to how a POSITA might achieve the claimed “enhanced capabilities” is to use multiple antennas. However, independent claim 1 of the ’943 patent, from which claim 2 depends, already recites “a plurality of antennas. Thus, it is not reasonably certain from the claim or the

specification whether dependent claim 2 requires *more* antennas in addition to the “plurality of antennas” of the independent claim, or something else. The disputed term is therefore indefinite.

**M. “interface” (’653 (1, 6, 10, 11, 17), ’836 (14), ’946 (1, 5, 6, 10, 11, and 17))**

Defendants’ Proposed Construction	SMT’s Proposed Construction
Plain and ordinary meaning, which is “a shared electrical or mechanical boundary between two hardware devices.”	A virtual or physical point of connection between software and/or hardware elements that enables them to interoperate.

Once more, SMT improperly seeks to change the scope of its claims to cover technologies not contemplated by the inventors by proposing a broadening construction of the term “interface” that goes well beyond the intrinsic record. The plain meaning of “interface,” when read in light of the intrinsic evidence, is “a shared electrical or mechanical boundary between two hardware devices.” SMT seeks to additionally include *virtual* points of connection between software elements, despite a lack of evidence that the inventors ever considered software to fall within the scope of “interface.” SMT’s proposed construction is unsupported by the intrinsic record and should be rejected.<sup>7</sup> *Phillips*, 415 F.3d at 1312, quoting *Multiform Desiccants*, 133 F.3d at 1477 (“The best source for understanding a technical term is the specification from which it arose ....”); *id.* at 1313, quoting *Medrad*, 401 F.3d at 1319 (“We cannot look at the ordinary meaning of the term ... in a vacuum. Rather, we must look at the ordinary meaning in the context of the written description and the prosecution history.”); *see also AstraZeneca AB*, 19 F.4th at 1330.

When viewed in the context of the intrinsic record, it is apparent that the plain and ordinary meaning of “interface” mandates Defendants’ construction. Every description of “interface” in the specification consistently refers only to physical points of connection between hardware

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<sup>7</sup> The term appears in asserted claims of the ’653, ’863 and ’946 patents, all of which share the same specification. Thus, this brief cites to the ’653 patent for this term, but those citations are representative.

elements, and never virtual connections between software elements. For example (emphasis added in all citations):

- “FIG. 5A illustrates a dual antenna, dual T/R unit in a CT/MD *interfacing with a dual processor* in the present invention in a dual band system.” ’653 patent, 2:15-17.
- “FIG. 6 is an embodiment of the present invention showing a *wired interface system* for wireless or non-wireless devices and including a wireless cradle adapter.” *Id.* at 2:21-23.
- “Module 308 contains RF/IF 304 and A/D, D/A converter 306, as well as processor 310, memory 312, control electronics 314, and other electronics such as display electronics 316 and *special interface circuitry* 318, such as for driving the output 320.” *Id.* at 3:55-59.
- “In addition to wireless signals there is a need to process *other types of input/output signals such as optical, cable, USB etc. to fully interface* with other types of devices and networks.” *Id.* at 5:11-14.
- “FIG. 6 is an embodiment of the present invention showing a *wired interface* system 600 for wireless or non-wireless devices. In FIG. 6, a wireless device, CT/MD 602 with I/O ports 610 and CT/MD 612 with *the ability to interface through a cradle adapter* 604 having both wireless and wired connections 606 interfacing with multiple input/output (I/O) ports 608 is shown.” *Id.* at 5:46-52.
- “In FIG. 8, a CT/MD 802 communicates through *internal electronic interfaces*, such as an RF/IF module 804 and an AD/DA unit 806 in a T/R block 808 with a processor 810.” *Id.* at 6:33-36.
- “Capability to *interface wired and wireless devices through a cradle adapter* to achieve universal connectivity.” *Id.* at 6:59-60.
- “The three data streams 1002, 1004, and 1006 are processed by the three T/R units 1008, 1010 and 1012, converted by converters 1014, 1016, and 1018, and presented to processors 1020, 1022, and 1024 under the control of controller 1026. *The data streams may be interfaced separately with server C 1030 or combined into data stream 1028 and interfaced to Server C 1030.*” *Id.* at 7:24-30.
- “The three data streams 1102, 1104, and 1106 are processed by the three fibre optic channel units 1108, 1110 and 1112, converted by converters 1114, 1116, and 1118, and presented to processors 1120, 1122, and 1124 under the control of controller 1126. *The data streams are combined into data stream 1128 and interfaced to Server C 1130.*” *Id.* at 7:49-57.
- “The CT/MD may have a universal serial bus (USB) port, a coaxial cable port, a standard telephone (POTS) port, a twisted pair port, Ethernet port, and most importantly an optical port. The CT/MD thus can *fully interface and interact with different environments* sequentially or simultaneously.” *Id.* at 9:23-27.

- “The network switch box may have a universal serial bus (*USB*) port, a *coaxial cable port*, a *standard telephone (POTS) port*, a *twisted pair port*, *Ethernet port*, and most importantly an *optical port*. The network switch box thus can *fully interface and interact with different environments* sequentially or simultaneously.” *Id.* at 9:50-55.
- “The ability to use the same CT/MD in different environments and applications and the ability to *quickly interface to various inputs and outputs* by a quick and easy plug in method into a receptacle or socket or by wired or wireless means such as a docking station.” *Id.* at 9:58-62.
- “The ability to use the same network switch box in different environments and applications and the ability to *quickly interface to various inputs and outputs* by a quick and easy plug in method into a receptacle or socket or by wired or wireless means such as a docking station.” *Id.* at 9:63-67.
- “The electronics that converts wireless to optical signals directly, to *efficiently interface wireless and optical signals and systems* without intermediate transport.” *Id.* at 10:32-34.

As with “ports,” the above description of “interfaces” is consistent with how the patents describe the inventions as a whole. For example, the patents use the “present invention” language to refer to *physical* interfaces, and even describe those interfaces as a “unique” aspect of the present invention:

*Some unique features of the present invention, which apply to either a CT/MD such as CT/MD 802 or to a network switch box such as network switch box 552, are:*

*Multiple antennas for greater signal range and bandwidth.*

*Multiple T/R units so that paths or tasks can be paralleled.*

*Multiple internal signal processors, or one or more processors that execute in parallel.*

*Multiple built in input/outputs for universal connectivity to different network environments.*

*Capability to interface wired and wireless devices through a cradle adapter to achieve universal connectivity.*

’653 patent, 6:48-58 (emphasis added); *see Univ. of Minn.*, 717 F.3d at 936 (limiting claims based on a description of the claimed invention “as a whole”); *Honeywell*, 452 F.3d at 1316–19 (similar); *SciMed*, 242 F.3d at 1343–44 (similar). In fact, one of the primary teachings of the patents is using a cradle adapter, connected to the mobile device through a physical interface, to allow the device

to communicate over a number of mediums—which the patents describe as “universal connectivity.” ’653 patent, 6:48-58; *see also id.* at 4:60-5:5; 6:46-68.

Thus, every instance of the term “interface” in the specification, including descriptions of the patented system as a whole, appears in the context of describing the physical interface between two hardware devices or describing the action of “interfacing” two hardware devices, thus confirming Defendants’ construction. Critically, there are *no* disclosures in the specification or the file histories for the ’653, ’863 and ’946 patents of an “interface” including virtual points of connection between software elements. If SMT argues that the specification somehow teaches virtual points of connection between software because it discloses that “data streams may be interfaced separately with server C” (*id.* at 7:24-30; 7:49-57) or that “data streams are combined... and interfaced to Server C” (*id.*), this is incorrect; both disclosures make clear that “interfacing” involves transferring a data stream on a physical connection made between a mobile device and “Server C”—two hardware devices—and both disclosures state that the optional step of combining data streams precedes “interfacing.” *Id.* Neither disclosure demonstrates that the inventors possessed the concept of virtual interfaces between software, confirming Defendants’ plain meaning.

Defendants’ plain and ordinary meaning proposal is also consistent with extrinsic evidence. *See, e.g.,* Ex. 30, NEWTON’S TELECOM DICTIONARY 458 (16th ed. 2000) (“1. A mechanical or electrical link connecting two or more pieces of equipment together. 2. A shared boundary. A physical point of demarcation between two devices where the electrical signals, connectors, timing and handshaking are defined. The procedures, codes, and protocols that enable two entities to interact for a meaningful exchange of information.”). Although some definitions of “interface” may include software as an alternative definition, the intrinsic record establishes that the inventors

were not contemplating software when using the term “interface,” and “[b]ecause the intrinsic record is clear,” the Court should “not give weight to an inconsistent dictionary definition.” *Digital Biometrics*, 149 F.3d at 1346.

Finally, SMT’s construction is also problematic because it would render the claims invalid for lack of written description and/or failure to enable the full scope of the claims since the ’653, ’863 and ’946 patents fail to disclose the concept of virtual interfaces between software elements for the reasons above. *Phillips*, 415 F.3d at 1327; *see also Trustees of Bos. Univ.*, 896 F.3d at 1365 (“We note finally that, to some extent, BU created its own enablement problem. ... Having obtained a claim construction that included a purely amorphous layer within the scope of the claim, BU then needed to successfully defend against an enablement challenge as to the claim’s full scope. ... Put differently: if BU wanted to exclude others from what it regarded as its invention, its patent needed to teach the public how to make and use that invention. That is ‘part of the quid pro quo of the patent bargain.’”) (citing *Sitrick*, 516 F.3d at 999.). Because the ’653, ’863 and ’946 patents fail to teach and enable virtual points of connection between software elements, only Defendants’ construction maintains the validity of the asserted claims.

**N. “multiplex / multiplexes / multiplexed / multiplexing” (’653 (1, 2, 3, 4, 27), ’083 (5, 8, 12, 19), ’075 (1), ’943 (2, 19), ’946 (1, 2, 3, 4, 16, 27), and ’291(7))**

Defendants’ Proposed Construction	SMT’s Proposed Construction
Plain and ordinary meaning, which is “to interleave or simultaneously transmit two or more messages on a single communications channel.”	To combine multiple signal streams or data streams into a single signal stream or data stream for transmission or further processing, or split a single signal stream or data stream into multiple signal streams or data streams for transmission or further processing.
The preamble of claim 1 of the ’075 patent is limiting.	

“Multiplex” has a well-understood ordinary meaning to a person of skill in the art, namely, “to interleave or simultaneously transmit two or more messages on a single communications channel,” and the specification of the asserted ’653, ’083, ’075, ’943 and ’946 patents uses the term accordingly. SMT seeks to broaden the construction of the term “multiplex” beyond its plain and ordinary meaning to incorporate the concept of combining “data streams into a single ... data stream for ... further processing.” But SMT’s expansive construction does not find support in the intrinsic or the extrinsic evidence.

First, the language of the asserted claims unambiguously uses the term “multiplex” to refer to interleaving or simultaneously transmitting two or more messages from a plurality of channels on a single communications channel, consistent with the plain meaning of the term. *See, e.g.*, ’653 patent, claim 1 (“...a single interface comprised of multiplexed signals from the plurality of wireless transmit and receive components”); ’946 patent, claim 1 (same); ’653 patent, claim 27 (“wherein the first wireless transmit and receive unit operates on a first network path to a remote server and the second wireless transmit and receive unit communicates to the remote server on a second network path at the same time and wherein a plurality of signal are multiplexed...”); ’075 patent, claim 1 (“wherein the first wireless transmit and receive unit operates on the first network path to a remote server and the second wireless transmit and receive unit communicates to the remote server on the second network path ... performance optimized for each through dedicated or multiplexed paths); ’946 patent, claim 27 (same); ’083 patent, claim 5 (“wherein the device is enabled for multiplex wireless communication of a plurality of signals using one or more channels and the plurality of antennas”). Thus, the claim language is clear and supports Defendants’ construction, not SMT’s.

Second, there is no indication in the shared specification of the '653, '083, '075, '943 and '946 patents that the inventors defined “multiplex” in some way inconsistent with the plain meaning, as SMT now proposes. There are no disclosures in the specification of multiplexing “data streams into a single ... data stream for ... further processing.” Rather, the 1999 application (09/281,739) to which the '653, '075, '943 and '946 patents claim priority confirms that the inventors sought to use the plain and ordinary meaning of “multiplex” as a person of ordinary skill in the art would have understood it. *See, e.g.*, Ex. 17, SM0000388 (“Multichannel capability and the ability to multiplex the inputs/outputs sequentially or simultaneously for use by a number of intelligent appliances is possible.”), SM0000389 (“The level of capability to queue, schedule, process, receive, and transmit data depends on the number of input and output channels, the size of the data buffer, and whether the inputs and outputs can be multiplexed.”), SM0000392 (“It is also possible to define an embedded transmitter/receiver function with multiple channels with and without multiplexing capability. ... As an option, specific channels may be multiplexed for use by a number of intelligent appliances.”), SM0000394-95 (“multiplexing inputs/outputs from a number of intelligent appliances/devices”). The weight of the intrinsic evidence confirms that the inventors only considered multiplexing signals from a plurality of communication channels into a single channel, and not, for example, the concept of combining data streams from different software applications. Furthermore, SMT’s construction would render the claims invalid for lack of written description and/or failure to enable the full scope of the claims since the '653, '083, '075, '943 and '946 patents fail to disclose how one would multiplex “data streams into a single ... data stream for ... further processing.” *Phillips*, 415 F.3d at 1327; *Trustees of Bos. Univ.*, 896 F.3d at 1365. Only Defendants’ construction maintains the validity of the asserted claims.

Third, the extrinsic evidence also supports Defendants’ plain and ordinary construction, consistently referring to interleaving or simultaneously transmitting two or more messages on a single communications channel. *See, e.g.*, Ex. 48, THE COMMUNICATIONS HANDBOOK 87 (Jerry D. Gibson, ed., 1996) (“The process of sending multiple signals on a single channel is called multiplexing.”); Ex. 49, THE AUTHORITATIVE DICTIONARY OF IEEE STANDARDS TERMS 716 (7th Ed., 2000) (“To interleave or simultaneously transmit two or more messages on a signal channel.”); Ex. 50, HARGRAVE’S COMMUNICATIONS DICTIONARY 338 (IEEE Press, 2001) (same); Ex. 51, WEBSTER’S NEW WORLD DICTIONARY OF COMPUTER TERMS 362 (8th Ed., 2000) (same); Ex. 52, NEWTON’S TELECOM DICTIONARY 585 (16th ed. 2000) (“To transmit two or more signals over a single channel.”). Ex. 53, MICROSOFT COMPUTER DICTIONARY 302 (4th Ed. 1999) (“Multiplexing n. A technique used in communications and input/output operations for transmitting a number of separate signals simultaneously over a single channel or line. ...”).

Finally, SMT’s construction is also incorrect because it attempts to include the process of splitting a data stream (instead of combining it). *See supra* (construing “multiplexing” as “split[ting] a single signal stream ... into multiple signal streams”). This process of splitting a data stream is the exact opposite of multiplexing, which refers to combining signals onto a single channel.

Defendants’ construction accurately captures the plain meaning of “multiplex” as used by both the intrinsic and extrinsic evidence and should be adopted.

*1. Preamble of claim 1 of the '075 patent*

In addition, the preamble of claim 1 of the '075 patent, which reads “An IP-enabled communication device for multiplexing signals comprising,” is limiting. The preamble sets forth several “essential structure[s] or steps,” including that the claimed communication device must be “IP-enabled” and is used “for multiplexing signals.” *Catalina Mktg. Int’l, Inc. v. Coolsavings.com*,

*Inc.*, 289 F.3d 801, 808 (Fed. Cir. 2002). Furthermore, when issuing the '075 patent, the examiner stated that “the prior arts of record do not teach or suggest an IP-enabled communication device for multiplexing signals comprising...,” suggesting that the preamble is a limitation that allowed the patent application to overcome the prior art. *Id.* For these reasons, the preamble of claim 1 of the '075 patent is limiting.

## V. CONCLUSION

For at least the foregoing reasons, Defendants respectfully request the Court construe the disputed terms as proposed by Defendants.

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Respectfully submitted,

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**CERTIFICATE OF SERVICE**

I hereby certify that all counsel of record who have consented to electronic service are being served with a copy of this document via the Court's CM/ECF on June 8, 2022. Any other counsel of record will be served by e-mail on this same date.

/s/ Aamir A. Kazi

Aamir A. Kazi